Supercomputing Challenge top winners: Los Alamos schools

April 26, 2011

LOS ALAMOS, New Mexico, April 26, 2011—Los Alamos Middle School student Cole Kendrick won the top prize in the 21st New Mexico Supercomputing Challenge hosted by Los Alamos National Laboratory. For his research project, “Computer Simulation of Dark Matter Effects on Galaxy Rotation,” Kendrick developed a computer program

to model the rotation of a galaxy including dark matter in an attempt to answer these questions:

- How does dark matter affect rotational curves in galaxies?
- How accurately can this effect be modeled?
- What happens when the dark matter and galaxy masses are changed?
- How well would this method work for different galaxies?

Kendrick received a check for $1,000. He also received the $100 Crowd Favorite Award and the Best Use of Visualization and Parallel Processing awards from the New Mexico Institute of Mining and Technology's Computer Science and Engineering Department.The Los Alamos High School team of Peter Ahrens, Stephanie Djidjev, and Dustin Tauxe took second place for their project, "BrilliAnts." Two teams tied for third place: a team from Eldorado and La Cueva high schools in Albuquerque, and Desert Academy in Santa Fe.The Supercomputing Challenge is open to any New Mexico high-school or middle-school student. More than 200 students representing about 50 teams from schools around the state spent the school year researching scientific problems, developing sophisticated computer programs, and learning about computer science with mentors from the state's national laboratories and other organizations.The goal of the yearlong event is to teach student teams how to use powerful computers to analyze, model, and solve real-world problems. Participating students improve their understanding of technology by developing skills in scientific inquiry, modeling, computing, communications, and teamwork.Ahrens, Djidjev, and Tauxe each received $500 for the second-place research project, in which the trio developed algorithms based on ant-foraging behavior to determine which ant colony optimizations work best. The team also received the best use of Python award and $100 from Four Watch Software and the Cray High Performance Computing Award.The third-place team from Eldorado and La Cueva high schools includes students Alexandra Porter and Evan Roche. Their research project is titled "Digital Analysis and Synthesis of Musical Recordings." They also won the Sandia Creativity and Innovation Award.The Desert Academy team includes students Sean Colin-Ellerin and Sara Hartse. Their project is titled "The North Pacific Gyre." They also received the Best Professional Presentation Award from the Santa Fe Complex.Third place team members each receive $250.There were seven other finalist teams. Students from these finalist teams received a banner for their school, posters, and $50 each.To read all the student reports, go to http://www.challenge.nm.org/finalreports/.Some of the other winners:

- Quemado High received the Best Technical Poster Award. Their poster will be used on the front cover for the 2011-12 final reports book, which will be published this fall during the kickoff for the 2011-12 Supercomputing Challenge.
- Los Alamos's Aspen Elementary School collected the Best Graphical Poster Award. Their design will become next year's logo and will appear on t-shirts, the Challenge website, and teacher bags.
- Las Vegas Robertson High School garnered the New Mexico Network for Women in Science and Engineering award for best project with a majority of women team members.
- Bernalillo High School received the Science Rocks Award for their project "The Effectiveness of Zombies."
- McCurdy School in Española received the Challenge Process Special Judges Award for their project "Contributing Factors to Obesity, Part 2."

- Los Alamos Middle School team members Madeline Lockhart, Sean Reynolds, and Ronald Derek Selvage received the Teamwork Award from the New Mexico Council for High Education Computing/Communication Service. They also received $100 for the Best Web Presentation of a Final Report.
- Albuquerque Sandia Preparatory School received the Best Researched award from the Council for Higher Education Computing/Communication Services for their report, “Orbital Solar Panels.”

Five students and teachers also received $100 door prizes in random drawings.Students presented their research to a team of volunteer judges on Monday at the Lab’s J. Robert Oppenheimer Study Center and discussed poster displays of their computing projects. They also toured the Laboratory’s supercomputing centers and heard talks and saw demonstrations by Laboratory researchers.A total of $42,700 in individual scholarships—$25,000 from the Laboratory’s Computer, Computational, and Statistical Sciences Division—were awarded on Tuesday.The Supercomputing Challenge is sponsored by Los Alamos and Sandia national laboratories.Educational partners include The Center for Connected Learning/NetLogo, CHECS, Eastern New Mexico University, MIT StarLogo, New Mexico Computing Applications Center, New Mexico EPSCoR, New Mexico Highlands University, New Mexico Institute of Mining and Technology, Northern New Mexico College, New Mexico Public Education Department, New Mexico State University, San Juan College, Santa Fe Community College, Santa Fe Institute, Santa Fe Complex, the University of New Mexico and the UNM Center for Advanced Research Computing, NMSU-Dona Ana Community College, and Tennessee State University.Lockheed Martin, Los Alamos National Laboratory Foundation, Abba Technologies/SGI, The Math Works, Synergy Group, Vandyke Software Inc., and Wolfram Research, Inc. are “Gold” commercial partners. “Silver” commercial partners are Google RISE, Gulfstream Group and bigbyte.cc, Intel Corporation, Los Alamos National Security, LLC, and Technology Integration Group. Bronze commercial partners are Apogentech, Albuquerque Journal, BX Internet, Cray Inc., Lobo Internet Services, New Mexico Business Weekly, New Mexico Technology and Council, Redfish Group, and Sun Microsystems.